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Correlations between land degradation processes and compositional characters of sediments in two studied area (Basilicata, Southern Italy).

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The soil erosion risk is widespread in Mediterranean area. Some areas of the Italy are an excellent example of soil erosion risk. The desertification vulnerability in Basilicata region (Southern Apennines - Italy) is mostly represented by water erosion forms. The calanchi and biancane are two typical erosion landforms present in the Basilicata region and this area is a key reference for the international concerning the studies of water erosion processes (Del Prete et al., 1997; Farifteh and Soeters, 1999; Rendell, 1986; Robinson and Phillips, 2001). Two different areas representing badlands have been studied; a) "typical" badland in Pisticci zone, as representative the usual morphology of the semi-arid Mediterranean area, characterized by south facing eroded slope and non eroded (covered) slope, facing the north, and b) Aliano area, some adjacent slopes characterised by deeply eroded side and covered side with the same exposure (south-east). For each slope, eroded and non eroded (in all case studies), samples were collected in order to represent the several litho-pedological levels. Since vegetated soils resist break down and crusting within the eroded slope, the crust was only differentiated with respect to substrate. The crust was defined as existing at 0-2 cm depth. Below the crust, the samples were labelled "substrate". The mineralogical, geochemical and grain-size composition features of these slopes has been determined to find common risk factors for the different areas. Only a few grain-size parameters, mineralogical and geochemical features discriminate the eroded and non eroded substrates (Summa et al., 2007). The water erosion phenomena is present where the fine

fraction is abundant (more evident in Aliano area than in Pisticci one). This can be explained with a reduction of permeability in eroded soils while the non eroded ones are more stable with respect to weathering phenomena, as they are more permeable. Crusts represent the more weathered and modified part of eroded sides, but their grain size and chemical features resemble non eroded materials better then their own substrate. Such a similarity can be depicted as an auto-stabilization process of superficial portion of eroded slopes (e.g. Alexander et al., 1994; Faulkner et al., 2003). Chemical data enable discrimination between eroded and non-eroded slopes in all case studies. pH, SAR (sodium adsorption ratio), TDS (total dissolved salts) and PS (percentage of sodium) are distinctive parameters for both eroded and non-eroded slopes. On average, eroded substrates are higher in pH, SAR and PS than non-eroded ones. The ESP (exchangeable sodium percentage) of the eroded slope has a higher value than the non-eroded one (Summa et al., 2007). The results of this study show that, even if geological and geomorphological differences exist between the two areas, common erosion risk factors can be characterized.